

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) An image pickup apparatus characterized by comprising:
 - an image pickup device for picking up an image of a subject;
 - a signal processing section for generating a composite image, the composite image having a relatively wider dynamic range than at least either the dynamic ranges a dynamic range of a long-time exposure image picked up with a relatively long exposure time by said image pickup device or a dynamic range of a short-time exposure image picked up with a relatively short exposure time by said image pickup device, by synthesizing said long-time exposure image and said short-time exposure image; and
 - a control section for compressing said composite image and dynamically varying the assignment an assignment proportion of a high luminance dynamic range to a low-middle luminance dynamic range in a dynamic range of an output image to be outputted as a video signal-signal,
 - wherein an exposure ratio of the relatively long exposure time to the relatively short exposure time is multiplied by the short-time exposure image so that an amount of input light of the long-time exposure image and the short-time exposure image is substantially the same.

2. (Currently Amended) The An-image pickup apparatus according to claim 1, characterized in that

wherein said control section dynamically varies said assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range according to at least a luminance region which occupies said composite image.

3. (Currently Amended) The An-image pickup apparatus according to claim 1, characterized in that

wherein said control section corrects said assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range each time said composite image is generated.

4. (Currently Amended) The An-image pickup apparatus according to claim 3, characterized in that claim 2,

wherein said luminance region is at least either a high luminance region or a low-middle luminance region.

5. (Currently Amended) The An-image pickup apparatus according to claim 1, characterized in that

wherein said control section dynamically varies said assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range according to at least an average luminance signal level of ~~said high~~ high luminance region which occupies said composite image.

6. (Currently Amended) The An-image pickup apparatus according to claim 1, ~~characterized in that~~
wherein said control section dynamically varies said assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range according to at least an average luminance signal level of said ~~low-middle~~ low-middle luminance region which occupies said composite image.

7. (Currently Amended) The An-image pickup apparatus according to claim 1, ~~characterized in that~~
wherein said control section dynamically varies said assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range according to at least said ~~high~~ high luminance region which occupies said composite image.

8. (Currently Amended) The An-image pickup apparatus according to claim 1, ~~characterized in that~~
wherein said control section dynamically varies said assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range according to at least said ~~low-middle~~ low middle luminance region which occupies said composite image.

9. (Currently Amended) ~~The An~~ image pickup apparatus according to ~~claim~~
~~8~~claim 1, characterized in that

wherein said control section at least monotonically varies said assignment
proportion of said high luminance dynamic range to said low-middle luminance dynamic range.

10. (Currently Amended) An image pickup apparatus ~~characterized by~~
comprising:

an image pickup device for picking up an image of a subject;

a signal processing section for generating a composite image, the composite
image having a relatively wider dynamic range than ~~the dynamic range~~ at least either a dynamic
range of at ~~least either a~~ long-time exposure image picked up with a relatively long exposure
time by said image pickup device or a dynamic range of a short-time exposure image picked up
with a relatively short exposure time by said image pickup device, by synthesizing said long-
time exposure image and said short-time exposure image; and

a control section for compressing said composite image and dynamically
assigning the dynamic range of said composite image to the dynamic range of an output image to
be outputted as a video ~~signal~~ signal.

wherein an exposure ratio of the relatively long exposure time to the relatively
short exposure time is multiplied by the short-time exposure image so that an amount of input
light of the long-time exposure image and the short-time exposure image is substantially the
same.

11. (Currently Amended) The An-image pickup apparatus according to claim 10, characterized in that

wherein said control section dynamically assigns the dynamic range of said composite image to the dynamic range of said output image according to at least a luminance region which occupies said composite image.

12. (Currently Amended) The An-image pickup apparatus according to claim 10, characterized in that

wherein said control section dynamically assigns the dynamic range of said composite image to the dynamic range of said output image each time said composite image is generated.

13. (Currently Amended) The An-image pickup apparatus according to claim 10, characterized in that

wherein said control section dynamically assigns the dynamic range of said composite image to the dynamic range of said output image according to at least a high luminance region which occupies said composite image.

14. (Currently Amended) The An-image pickup apparatus according to claim 10, characterized in that

wherein said control section dynamically assigns the dynamic range of said composite image to the dynamic range of said output image according to at least an average luminance signal level of said high luminance region which occupies said composite image.

15. (Currently Amended) The An-image pickup apparatus according to claim 10, ~~characterized in that~~

wherein said dynamic range is at least either a high luminance dynamic range or a low-middle luminance dynamic range.

16. (Currently Amended) The An-image pickup apparatus according to claim 15, ~~characterized in that~~

wherein said control section dynamically assigns assignment of at least either said high luminance dynamic range or said low-middle luminance dynamic range of said output image according to said ~~high~~ high luminance region which occupies said composite image.

17. (Canceled).

18. (Currently Amended) The An-image pickup apparatus according to claim 15, ~~characterized in that~~

wherein said control section dynamically assigns a section of said high luminance dynamic range of said output image to said low-middle luminance dynamic range according to at least a decrease of said ~~high~~ high luminance region which occupies said composite image.

19. (Currently Amended) The An-image pickup apparatus according to claim 15, ~~characterized in that~~

wherein said control section dynamically assigns a section of said high luminance dynamic range of said output image to said low-middle luminance dynamic range according to at least a decrease of an average luminance signal level of ~~said high~~ high luminance region which occupies said composite image.

20. (Currently Amended) The An-image pickup apparatus according to claim 15, ~~characterized in that~~

wherein said control section dynamically assigns a section of said low-middle luminance dynamic range of said output image to said high luminance dynamic range according to at least an increase of ~~said high~~ high luminance region which occupies said composite image.

21. (Currently Amended) The An-image pickup apparatus according to claim 15, ~~characterized in that~~

wherein said control section dynamically assigns a section of said low-middle luminance dynamic range of said output image to said high luminance dynamic range according to at least an increase of an average luminance signal level of ~~said high~~ high luminance region which occupies said composite image.

22. (Currently Amended) The An-image pickup apparatus according to claim 2+claim 15, characterized in that

wherein said control section at least monotonically varies the assignmentan assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range of the said output image.

23. (Currently Amended) An image pickup apparatus characterized by comprising:

an image pickup device for picking up an image of a subject;

a detection section for detecting an image signal of a long-time exposure image picked up with a relatively long exposure time by said image pickup device, and an image signal of a short-time exposure image picked up with a relatively short exposure time by said image pickup device;

a synthesis section for generating a composite image from said long-time exposure image and said short-time exposure image on the basis of a switch luminance signal level determined from said image signals;

a control section for compressing said composite image according to a luminance region which occupies said composite image, and dynamically assigning the dynamica dynamic range of an output image to be outputted as a video signal; and

a compression section for compressing the dynamic range of said composite image on the basis of dynamic assignment of said dynamic range of said output image.image.

wherein an exposure ratio of the relatively long exposure time to the relatively short exposure time is multiplied by the short-time exposure image so that an amount of input

light of the long-time exposure image and the short-time exposure image is substantially the same.

24. (Currently Amended) The An-image pickup apparatus according to claim 23, characterized in that

wherein said luminance region is at either a high luminance region or a low-middle luminance region.

25. (Currently Amended) The An-image pickup apparatus according to claim 23, characterized in that

wherein said synthesis section acquires, from said short-time exposure image, said ~~pixels~~pixels corresponding to at least a higher luminance signal level than said switch luminance signal level among pixels constructed in said composite image.

26. (Currently Amended) The An-image pickup apparatus according to claim 23 characterized in that

wherein said synthesis section acquires, from said long-time exposure image, said ~~pixels~~pixels corresponding to at least a lower luminance signal level than said switch luminance signal level among ~~said pixels~~pixels constructed in said composite image.

27. (Currently Amended) ~~The An~~-image pickup apparatus according to claim 23, characterized in that

wherein said dynamic range is at least either a high luminance dynamic range or a low-middle luminance dynamic range.

28. (Currently Amended) ~~The An~~-image pickup apparatus according to claim 23, characterized in that

wherein said control section determines a compression gain for compressing a luminance signal level of said composite image on the basis of at least ~~the assignment~~ an assignment proportion of a high luminance dynamic range of said output image to a low-middle luminance dynamic range thereof.

29. (Currently Amended) ~~The An~~-image pickup apparatus according to claim 23, characterized in that

wherein said control section determines at least a high luminance compression gain for compressing a luminance signal level of said ~~high~~ high luminance region in said composite image and a low-middle luminance compression gain for compressing a luminance signal level of said ~~low-middle~~ low-middle luminance region.

30. (Currently Amended) ~~The An~~-image pickup apparatus according to ~~claim~~ claim 29, characterized in that

wherein said control section further includes a compression gain calculation section for determining, for each luminance signal level of said composite image, at least either a

final high luminance compression gain or a final low-middle luminance compression gain which are to be used by said compression section, on the basis of at least either said high luminance compression gain or said low-middle luminance compression gain.

31. (Currently Amended) ~~The An~~ image pickup apparatus according to claim 23, ~~characterized in that~~
wherein said control section dynamically varies an assignment proportion between said ~~high~~ high luminance dynamic range and said ~~low-middle~~ low-middle luminance dynamic range of said output image according to at least said ~~high~~ high luminance region which occupies said composite image.

32. (Currently Amended) ~~The An~~ image pickup apparatus according to claim 31, ~~characterized in that~~
wherein said control section at least monotonically varies the assignment proportion of said high luminance dynamic range to said low-middle luminance dynamic range of said output image.

33. (Currently Amended) An image pickup apparatus ~~characterized by~~
comprising:
an image pickup device for picking up an image of a subject;
a detection section for detecting an image signal of a long-time exposure image picked up with a relatively long exposure time by said image pickup device, and an image signal

of a short-time exposure image picked up with a relatively short exposure time by said image pickup device;

a synthesis section for excluding said luminance signal level from a target to be synthesized, when at least said image signal corresponding to a luminance signal level of either said long-time exposure image or said short-time exposure image is absent, and synthesizing said long-time exposure image and said short-time exposure image on the basis of said ~~switch~~a switch luminance signal level;

a control section which dynamically assigns ~~the dynamic~~a dynamic range of an output image to be outputted as a video signal in which a composite image is compressed, according to a luminance region which occupies said composite image in which said long-time exposure image and said short-time exposure image are synthesized; and

a compression section for compressing the dynamic range of said composite image on the basis of dynamic assignment of said dynamic range of said output ~~image~~image.

wherein an exposure ratio of the relatively long exposure time to the relatively short exposure time is multiplied by the short-time exposure image so that an amount of input light of the long-time exposure image and the short-time exposure image is substantially the same.

34. (Currently Amended) The ~~An~~ image pickup apparatus according to claim 33, ~~characterized in that~~

wherein said synthesis section selects said luminance signal level lower than said switch luminance signal level in said long-time exposure image, as a target for said composite image.

35. (Currently Amended) The An-image pickup apparatus according to claim 33, characterized in that

wherein said synthesis section selects said luminance signal level higher than said switch luminance signal level in said short-time exposure image, as a target for said composite image.

36. (Currently Amended) The An-image pickup apparatus according to claim 33, characterized in that

wherein said luminance region is at least either a high luminance region or a low-middle luminance region.

37. (Currently Amended) The An-image pickup apparatus according to claim 33, characterized in that

wherein said dynamic range is at least either a high luminance dynamic range or a low-middle luminance dynamic range.

38. (Currently Amended) The An-image pickup apparatus according to claim 33, characterized in that

wherein said control section dynamically varies the assignment an assignment proportion of said high high luminance dynamic range to said low-middle a low-middle luminance dynamic range of said output image according to at least a high luminance region which occupies said composite image.